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IS 13070 (1991): Alpha Naphthyl Acetic Acid, Technical [FAD 1: Pesticides and Pesticides Residue Analysis]

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भारतीय मानक

अल्फा नेंफथाईल एसेटिक अम्ल, तकनीकी

Indian Standard

ALPHA NAPHTHYL ACETIC ACID, TECHNICAL

UDC 631·811 : 547·657

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

May 1991

Price Group 2

Pesticides Sectional Committee, FAD 1

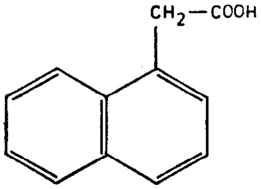
FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Pesticides Sectional Committee had been approved by the Food and Agriculture Division Council.

Alpha naphthyl acetic acid, technical is employed in the preparation of formulations used as plant growth regulator.

Alpha naphthyl acetic acid is the accepted common name by the International Organization for Standardization (ISO) for 1-naphthyl acetic acid or 1-naphthalene acetic acid.

The empirical and structural formulae and the molecular mass of *alpha* naphthyl acetic acid are given below:

Empirical Formula	*Structural Formula*	*Molecular Mass*
$C_{12}H_{10}O_2$		186·2

In the preparation of this standard, due consideration has been given to the provisions of the *Insecticides Act, 1968* and the Rules framed thereunder. However, this standard is subject to the restrictions imposed under these, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

ALPHA NAPHTHYL ACETIC ACID, TECHNICAL

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for *alpha* naphthyl acetic acid, technical.

2 REFERENCES

The Indian Standards listed in Annex A are necessary adjuncts to this standard.

3 REQUIREMENTS

3.1 Description

The material shall be in the form of white to cream coloured powder emitting a slight naphthalene type odour. It shall be free from extraneous impurities.

3.2 Identity Test

When tested by the method prescribed in Annex B, the material shall have an ultra-violet (UV) absorption maxima at 280 nm.

3.3 Solubility

When 5 g of the material is dissolved in 30 ml of 1 N sodium hydroxide solution and diluted to 50 ml with water, the resultant solution shall not be hazy or dirty and be not more than pale yellow in colour.

3.4 The material shall also comply with the requirements specified in Table 1.

Table 1 Requirements of *Alpha* Naphthyl Acetic Acid, Technical

Sl No.	Characteristic	Requirement	Method of Test, Ref to	
			Annex of this Standard	Cl No. of IS 6940 : 1982
(1)	(2)	(3)	(4)	(5)
i)	*Alpha* naphthyl acetic acid, percent by mass, *Min*	98·0	C	—
ii)	Melting paint, °C	126-132	—	6
iii)	Sulphated ash content, percent by mass, *Max*	0·5	D	—

4 PACKING

The material shall be packed in high density polyethylene (HDPE) woven sacks provided internally with a low density polyethylene (LDPE) loose liner of thickness not less than 0·062 mm. The container shall also comply with the general packing requirements specified in IS 8190 (Part 1) : 1988.

5 MARKING

5.1 The container shall bear legibly and indelibly the following information in addition to any other information as required under the *Insecticides Act, 1968* and the Rules framed thereunder:

a) Name of the material;

b) Indication of the source of manufacture;

c) Batch number;

d) Date of manufacture and date of expiry;

e) Net mass of the contents;

f) *Alpha* naphthyl acetic acid content, percent (*m/m*);

g) The minimum cautionary notice as worded under the *Insecticides Act, 1968* and the Rules framed thereunder.

5.2 The container may also be marked with the Standard Mark.

6 SAMPLING

Representative samples of the material shall be drawn as prescribed in IS 10946 : 1984.

7 TESTS

7.1 Tests shall be carried out by the appropriate methods referred to in **3.2**, **3.3** and col 4 and 5 of Table 1.

7.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1977) shall be employed in the tests.

NOTE — 'Pure chemicals' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
1070 : 1977	Water for general laboratory use (*second revision*)
6940 : 1982	Methods of test for pesticides and their formulations (*first revision*)
8190 (Part 1) : 1988	Requirements for packing of pesticides: Part 1 Solid pesticides (*second revision*)
10946 : 1984	Methods of sampling for technical grade pesticids

ANNEX B

(*Clause* 3.2)

IDENTITY TEST

B-1 APPARATUS

B-1.1 Ultra-Violet Spectrophotometer — with quartz cells of path length 1 cm.

B-2 REAGENTS

B-2.1 Sodium Hydroxide Solution — 1 N.

B-2.2 Purified *Alpha* Naphthyl Acetic Acid — prepared as described in Annex E.

B-3 PROCEDURE

B-3.1 Transfer about 0.15 g of the material in a 500-ml volumetric flask and dissolve in 125 ml sodium hydroxide solution. Dilute to the mark with water and mix. Pipette 5 ml of this solution into a 100-ml volumetric flask, add 25 ml sodium hydroxide solution, dilute to the mark with water and mix well.

B-3.2 Scan the solution (**B-3.1**), for absorbance using 1 cm cell, between 220 and 350 nm against a blank prepared by diluting 25 ml sodium hydroxide solution to 100 ml with water. The spectrum shall be similar to that of the purified *alpha* naphthyl acetic acid with an absorbance maxima at 280 nm.

ANNEX C

[*Table* 1, *Sl No.* (i)]

DETERMINATION OF *ALPHA* NAPHTHYL ACETIC ACID

C-1 REAGENTS

C-1.1 Methanol — Neutralized, AR grade, alternatively neutralized ethanol or isopropanol may be used.

C-1.2 Sodium Hydroxide Solution — 0.5 N.

C-1.3 Phenolphthalein Indicator Solution

C-2 PROCEDURE

Weigh accurately 3 g sample and dissolve in 40 ml methanol and titrate with sodium hydroxide solution using phenolphthalein as indicator, to a pink colour end point.

C-3 CALCULATION

$$\textit{Alpha}\text{ naphthyl acetic acid content, percent by mass} = \frac{18.62 \times V \times N}{M}$$

where

V = volume, in ml, sodium hydroxide solution used in the titration;

M = mass, in g, of the sample taken for the test;

N = normality of sodium hydroxide solution; and

ANNEX D

[*Table* 1, *Sl No.* (iii)]

DETERMINATION OF SULPHATED ASH CONTENT

D-1 APPARATUS

D-1.1 Muffle Furnace

D-1.2 Platinum Dish — 50-100 ml capacity, alternatively any other suitable dish of similar capacity may be used.

D-1.3 Desiccator

D-2 REAGENTS

D-2.1 Dilute Sulphuric Acid — 10 percent (*m*/*v*).

D-3 PROCEDURE

Transfer about 2 g of the sample, accurately weighed, to a platinum dish (**D-1.2**) and add sufficient sulphuric acid to moisten the entire sample. Heat gently, until the sample is thoroughly charred. Continue heating until all of the sample is volatilised or nearly all the carbon has been oxidised. Cool, moisten the residue with 0·1 ml sulphuric acid, and heat in the same manner until the remainder of the sample and any excess sulphuric acid has been volatilised. Finally ignite in a muffle furnace at 800±25°C for 5 minutes. Cool in a desiccator and weigh.

D-4 CALCULATION

$$\text{Sulphated ash content, percent by mass} = \frac{M_1}{M} \times 100$$

where

M_1 = mass, in g, of residue; and

M = mass, in g, of the sample taken for the test.

ANNEX E

(*Clause* B-2.2)

PURIFICATION OF *ALPHA* NAPHTHYL ACETIC ACID

E-1 PROCEDURE

Dissolve technical grade *alpha* naphthyl acetic acid in hot water. Filter the hot solution under vacuum and cool the filtrate for crystallization. Separate the crystals by filtration and wash them with warm water. Dry the crystals in an air-oven at 105 ± 2°C.

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